



## LESSONS LEARNED

CATA

Fort Leavenworth

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**LESSONS LEARNED  
BY/FOR DIVISION COMMANDERS  
NEWSLETTER - SEPTEMBER 1986**

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# **DEPARTMENT OF THE ARMY**

**Combined Arms Training Activity  
Fort Leavenworth, Kansas 66027-7000**

"It is firepower, and firepower that arrives at the right time and place, that counts in modern war."

--B.H. Liddell Hart, Thoughts on War, XIV 1944

1. The synchronization of all available assets is one of the most significant challenges facing the commander on the AirLand Battlefield. The commander's careful integration of combat support systems with maneuver is especially essential if he is to bring his maximum combat power to bear against the enemy.
2. The NTC Analysis Division of the Center for Army Lessons Learned focused primarily on the combat support systems for this newsletter. These lessons learned are derived largely through the long-term observations of the combat trainers of the NTC Operations Group and an assessment by CATA's NTC Observation Division, in conjunction with TRADOC subject matter experts during recent NTC rotations.
3. In its effort to "get the word out" to the rest of the Army, CATA provides these tactics, techniques, and procedures for your use and dissemination. If your unit has identified any combat relevant lessons at the NTC or any other training exercises, share them with the rest of the Army by contacting the Center for Army Lessons Learned, AV 552-2191/2438.

**JOHN C. HELDSTAB**  
**Brigadier General, USA**  
**Commanding**

# **SECTION I: MANEUVER**

## **Fire Support for the Scout Platoon**

(FM 71-2J, App; FM 17-98, Chap 9)

The mission of the scout platoon is to find and maintain contact with the enemy and to destroy the enemy's reconnaissance. Experience, however, demonstrates that when the scout platoon tries to destroy the enemy's reconnaissance by direct fire, the scout platoon, in turn, is eventually discovered and destroyed by the enemy. One obvious alternative to a direct fire confrontation is for the scout platoon to use indirect fire. Since the scout platoon is not authorized a forward observer (FO), fire support officer (FSO), or a fire support team (FIST), the scout platoon leader or sergeant must call for his own fires. This divides his attention between making accurate and timely spot reports to the task force and calling for fire to destroy the enemy.

Some units have assigned a FO to the scouts to relieve the platoon leader/sergeant from having to call for fire at the same time he is supposed to report to the task force. Generally, this has resulted in quicker response, better accuracy, and increased volume of indirect fire. In order to maximize the results of this system, the scouts should have priority of artillery fires (as opposed to 4.2 mortars because of the artillery's greater range and lethality).

The question is where to find a spare FO on the battlefield. One option is to take an FO from an infantry platoon from the reserve or trailing company team. He will certainly achieve more kills forward with the scout platoon than at the rear of the task force.

**Dismounted Night Attacks**  
(FM 71-2J, Chap 3; FC 71-1J, Chap 3)

"Time and time again, a few skilled infantrymen are the difference between winning and losing a battalion/brigade level battle . . . They conduct the night attack which causes enemy armor to reposition, thereby facilitating its destruction by friendly tank and AT fire at first light."

--BG E. S. Leland, Jr., Commanding General, NTC, 20 November 1985

"If the enemy has AT weapons in a prepared defense, your chance of success is almost always better if you plan to assault (at night) with dismounted infantry supported by tanks and TOWs in overwatch."

--LTC Mac Johnson, Senior Combat Trainer (Armor), NTC, 24 April 1986

Of all the missions a mechanized infantry leader is expected to accomplish, perhaps the most difficult is the dismounted attack against prepared, enemy position. This task is extraordinarily difficult for many reasons. Among them, success depends on the enemy being caught completely off guard. It depends on detailed, accurate, and timely reconnaissance. The unit must also transition from mounted to dismounted movement, navigate at night over rugged terrain, and carry all the equipment needed to kill or rout the enemy. In the assault, dismounted leaders must control all fires on the objective -- indirect, direct supporting, and the dismounted force.

Finally, dismounted infantry are extremely vulnerable to Soviet artillery fires. The following techniques on conducting dismounted night attacks have proven successful.

- \$ Plan to guard the plan. The enemy must not know that the assault is coming until dismounted infantrymen are on top of him. Plan to confuse and deceive him. Plan for stealth in reconnaissance and movement. Plan for contingencies.
- \$ Reconnaissance. The reconnaissance party should include an engineer to provide route and obstacle evaluation and leaders from the assault unit. Priority Intelligence Requirement (PIR) for the assault unit must include mobility and concealment along the proposed axes/directions of attack (primary and alternate), location of a secure dismount point (primary and alternate), and the location and orientation of enemy obstacles, OPs, dismounts, and every vehicle on and near the objective. Based on his disposition and orientation, the direction of assault can be decided and the assault position, probable line of deployment, and limit of advance selected. Stay-behind guides from the assault unit can also be included in the reconnaissance to operate as a quartermaster party. They must have comms with the TOC, binoculars, night observation devices (NOD), and specific instructions for every contingency: e.g., what to look for; what, when, and how to report; how to guide the unit into position; and where to go if they are discovered. Guides can be left along the route at the dismount point and near or in the assault position. Finally, reconnaissance starts as soon as possible after the task force receives its warning order.

- \$ Be prepared to modify the plan based on changes in the enemy situation, as reported by your stay-behind guides.
- \$ Equip the unit. Because the dismount point will probably be several kilometers from the objective, the assault force must travel as light as possible. Consider every piece of equipment to be carried. For example, if LAWs will cause enemy vehicles to move so that they can be destroyed by tank and TOW fire, then leave the Dragons on the carriers.
- \$ Rehearsal. If the plan is not rehearsed in the assembly area, name the first phase line CHAOS. Ideally, every action from departing the assembly area to consolidating on the objective should be rehearsed. Battle drills which have been engrained into the unit will facilitate the effectiveness of rehearsals. Realistically, the rehearsal must be prioritized. An example of prioritization for the assault unit, with some notes, follows:
- \$ 1st Priority: Actions on the objective. Using information from the reconnaissance, find the most similar piece of terrain possible and position carriers on it to replicate enemy vehicles on the objective. Use vehicle crews to replicate enemy OPs and dismounts. Use engineer tape to replicate enemy obstacles.
- \$ 2nd Priority: Actions in the assault position. Rehearse movement into the assault position exactly as the stay-behind guides were briefed. Once the assault line is formed, make sure that everyone understands the sequence of preparatory fires.
- \$ 3rd Priority: Movement from the dismount point to the assault position. Practice stealth and make sure that the lead squad understands the rate of march. Also, rehearse contingencies; e.g., rally points, indirect fire, near and far direct fire, and breaks in contact.
- \$ 4th Priority: Actions at the dismount point. Again, don't surprise the stay-behind guides. Practice moving the carriers in to facilitate the dismounted movement. Also, make sure that the carrier teams know what they are to do.
- \$ 5th Priority: Movement from the assembly area to the dismount point

Again, make sure that the lead squad understands the rate of march and rehearse the previously mentioned contingencies while mounted.

Rehearse in daylight and then at night until everyone understands his role in the operation.

\$ External Fire Control. There should be at least three contingencies for initiating, shifting, and stopping both indirect and direct supporting fires. Some examples are: (1) by clock time, (2) by FM radio, and (3) by pyrotechnic signal which must be fired from outside the assault position. Plan for the assault unit to hug these fires -- to always move at or within danger close ranges. Plan for smoke on the enemy's flanks and rear to isolate the objective.

\$ Internal Fire Control. For the assault unit on the objective, the following principles apply:

- Keep everyone oriented in the same direction.
- Command and control is paramount.
- Divide the objective using terrain features that are easily identifiable at night, such as ridges, wadis, and trails.
- Begin the assault with two platoons on line and the third platoon following in a file in reserve. Once firing begins, fire and maneuver in short rushes is a must. Within the two forward platoons, every third man can be a designated vehicle killer, the others should kill anything that is not a vehicle, and everyone fires to the front.
- Plan and rehearse in detail.

## **SECTION II: COMMAND & CONTROL**

### **Coordination with Attached and Direct Support Leaders**

(FM 71-2J, Chap 2)

The NTC drives home the lesson that combat multipliers can spell the difference between victory and defeat. A well-executed obstacle plan can slow or stop the enemy and allow his destruction by friendly AT systems. The air defense element must understand what the scheme of maneuver is and the commander's priority of air defense to properly position Vulcans and Stingers to support the force.

The key is that combat support element leaders must fully understand their role in supporting the commander's intent and the scheme of maneuver. Therefore, the commander must give them specific instructions in terms they understand. Maneuver commanders tend to assume that everyone understands maneuver terms and graphics, but this is not always the case. It is true that units which habitually train, wargame, and plan with the same "slice" element leaders have an easier time communicating the commander's concept; any change to the team's composition complicates the communication process. Exchanges of unit SOPs or SOP extracts are essential to close coordination between supporting and supported units. Habitual relationships developed and refined during training are critical in fully exploiting the potential of combat support assets.

Coordination can be improved in several ways. One way is for the commander or S3 to demand that the combat support subordinate leader give a briefback during the planning process. If the subordinate leader is required to, "Tell me what I told you to do and how you will do it in your own words," potential misunderstandings surface and can be clarified before mission execution begins.

Another technique is to get the combat support leader to explain what he thinks terms like "overwatch," "suppress," and "assault" mean. This gives a common meaning to terms between maneuver and combat support leaders. This is not as desirable as the backbrief because it is not nearly as thorough.

Though the burden of fully integrating all combat and combat support assets rests squarely on the maneuver commander and his S3, the combat support leader has the responsibility of demanding clarification of any tasks or missions he does not fully understand. The time to clear up "fuzzy" guidance is before, not after mission execution begins. If it is not completely clear what the commander wants in the way of fire support, for example, the FSO must go back and ask specific questions. If combat support leaders do not do this, the maneuver commander will probably assume that everyone understands what he wants, and any problems will not surface until the execution phase. By then, it may be too late to sort things out and exploit the full potential of all the available assets.

The newer a team member is, the more attention that must be paid to ensuring he fully understands the scheme of maneuver and his part in it. This communication process must work both ways; the maneuver commander must explain missions in terms everyone understands, and combat support leaders must ask for clarification on any points they do not fully comprehend. This will help the unit to fully integrate all of its combat multipliers and makes victory much easier to achieve.



## SECTION III: AVIATION

### Aviation Operational Considerations

(FM 1-111, Chap 1-7, FM 1-100, Chap 1-8)

Successful integration and synchronization of Army Aviation with ground maneuver forces results from detailed plans, thorough preparation, and aggressive execution using proven tactical fundamentals. Despite adequate current doctrine, aviation units are continuing to be challenged in the following areas:

- ◆ Aviation commanders and staff must understand ground maneuver doctrine as discussed in FM 71-3 (*The Armor and Mechanized Infantry Brigade*) and FM 71-2J, (*The Tank and Mechanized Infantry Battalion Task Force*) in the same manner that ground unit commanders and staff must understand aviation doctrine as discussed in FM 1-100 (*Combat Aviation Operations*) and FC 1-111 (*The Aviation Brigade*). Aviation commanders and staffs must actively participate in the supported units "wargaming" process.

Additionally, they must plan for the employment and support of ground forces under their operational control.

- ◆ A qualified LNO (experienced captain) at brigade/task force level enhances the integration and coordination of attack helicopters.
- ◆ At home station, a habitual training relationship with the different ground elements is helpful. This relationship may not be possible during combat operations due to the large area of interest required of aviation units. However, the development of standardized SOPs and LNO techniques, prior to deployment, is invaluable. Aviation leaders down to crew level, should participate in brigade/task force training, AARs, and chalk talks. This training increases the cohesion and confidence required to execute demanding scenarios, especially for the staff level.
- ◆ Aviation staffs must accomplish detailed tactical planning and reconnaissance prior to employment. No unit can ever assume that anything will happen automatically!

- ◆ Successful aviation commanders and staffs at all levels use the following fundamentals:
  - The military decision making process as discussed in FM 101-5 and FC 71-6, ensuring aviation supports the overall maneuver effort.
  - The five paragraph field order and the 1/3 - 2/3 planning rule, ensures complete and easily understood instructions and allows time for leader/crew reconnaissance.
  - The use of the IPB process as described in FM 34-80, chap 4, and FM 34-3, chap 4, to "know the enemy" and "see the battlefield" is critical. The aviation S2 must aggressively seek intelligence products from higher headquarters and be closely involved with the supported units reconnaissance and counterreconnaissance plan. Where possible, the aviation unit should have specific collection tasks as a part of that plan. Finally, the aviation S2 must proactively develop and update intelligence information throughout the operation with input from higher headquarters and aerial/ground scouts. This provides the commander and crews with enemy dispositions and the enemy commander's intent. The IPB is a tool which helps to ensure the unit's success on the battlefield.
  - Aviation leaders at all levels must perform pre-combat inspections of equipment and personnel. FC 71-6, Appendix J (***Battalion and Brigade Command and Control***), and FC 17-15-3 (***Tank Platoon SOP***) have pre-combat checklists that can be adapted to aviation units. Additionally, detailed reconnaissance of routes and battle positions is critical.
  - Maneuver. Attack helicopters, massed effectively, maximize destruction and minimize losses. Experience shows attack helicopters must not "hunt" for targets, as they die quickly to dismounted enemy. Commanders must carefully weigh the risk to aircraft and crews anytime they are required to overfly enemy ground.
- ◆ Offense. Aviation should not attack "dug in" targets. Allow ground elements to develop the situation, cause the enemy to move, and then the attack helicopters move forward to reengage.
- ◆ Defense. Attack helicopters use maximum standoff range, mass fires, short engagements, and move rapidly to alternate positions to limit enemy observation and effective fire. Attack helicopters need to engage prior to the main battle area and after the enemy has penetrated the FLOT. They must preplan engagements, to include JAAT, at chokepoints and obstacles. Aviation units need priority of artillery fire and CAS missions forward of the FLOT. This requires detailed staff coordination with the supported maneuver unit prior to the battle.
  - Scouts. Aggressive, disciplined, and coordinated aerial scouts using techniques in FM 17-35 (***Aeroscout Procedures***) and FM 17-98 (***The Army 86 Scout Platoon***) contribute significantly to the IPB and decision making process. Aerial scouts need to be a part of the supported units counterreconnaissance plan. In open, unrestricted terrain, aero scouts must dismount and man static observation posts to better provide detailed information to the ground commander concerning enemy dispositions and obstacles.

Successful aviation units at the NTC have done the following to enhance their combat effectiveness:

- ◆ Crews boresight MILES weapon systems to standards daily, to include a long range zero at 2000 meters against an actual tank or APC. During FARP operations, boresights are updated. A 2000-meter boresight panel incorporating a MILES belt located at the FARP can be readily used to update the boresight.
- ◆ Target acquisition practice and predesignated sectors of fire pay big benefits.
- ◆ Gunners must practice often on range estimation to prevent engagements that are out of range.
- ◆ Crew coordination is enhanced when commanders stabilize crews.
- ◆ Crews need to utilize the drills in FM 17-50-2, *Crew Drills for Aero Scout and Attack Helicopters*.
- ◆ High energy tactics (running fire 30-40 knots) limits dust signatures.

These are not new lessons. Given a sophisticated enemy, aviation leaders at all levels must instill high standards, drill fundamentals, and ensure SOPs are used and understood by the individual soldier. Finally, the aviation team must actively integrate into all combined arms planning.

## **SECTION IV: INTELLIGENCE**

### **The Role of the BICC**

(FM 34-3, Chap 1; FM 34-80, Chap 3)

The task force S2 section must continuously anticipate "tomorrow's battle" requirements to facilitate planning future operations. The S2 is often too deeply involved in the current battle to be actively involved in future operations. This is where the task force battlefield information control center (BICC) can be effectively used.

The BICC officer must perform his primary intelligence functions IAW current doctrine in the task force TOC. The BICC performs the preliminary analysis for future operations. The S2 receives, analyzes, and disseminates current battle information to the commander. The next battle is an extension of the current operation. The BICC continues to develop the IPB to support the next operation.

Inherent to this function is the BICC's role in collection planning. He develops and initiates the task force reconnaissance and surveillance plan. Additionally, he should start identifying requirements which cannot be satisfied with organic assets and conducts preliminary coordination with the brigade S2 for the appropriate support.

The BICC performs a valuable function for the task force commander in this role. This frees the S2 to place his complete energy and concentration on developing an accurate intelligence estimate on the current battle for the commander. At the same time, the BICC is laying the foundation upon which a sound enemy intelligence estimate may be based when the unit is ordered to execute the anticipated operation. The commander thus has readily available the TAIs, NAIs and decision lines he will need early in his subsequent planning process.

## **SECTION V: FIRE SUPPORT**

### **Face-to-Face Coordination (Artillery Wargaming)**

(FM 6-20, Chap 3; FM 6-20-1J, Chap 5)

The inability of a unit to "close-the-loop" in the fire planning process results in poor execution. The missing link in this process is the failure to wargame the fire plan with the artillery TOC/FDC. After the brigade FSO reviews the input from the task force FSOs to ensure the plan reflects the brigade commander's intent and is complete, he transmits this to the field artillery TOC/FDC. Many units consider this to be the completion of fire planning. Units should require the brigade FSO to conduct face-to-face coordination with the artillery unit. This artillery wargaming cuts down confusion at execution time. Key players, besides the brigade FSO, are the field artillery battalion commander, XO, S2, S3, and fire direction officer (FDO). A well executed wargaming process results in the artillery unit being proactive rather than reactive. This process can take place at the artillery TOC/FDC or brigade TOC. Key areas that need to be addressed are:

- ◆ Identifying the brigade commander's intent and concept of the operation
- ◆ Analyzing the fire support plan from an artillery perspective and wargaming how it will be executed.

Problems with the plan which are identified through this process can be resolved on the spot or referred to the appropriate commander for resolution. Unresolvable problems are reported to the maneuver commander quickly so that he can consider them in his planning process. A good technique is the reverse planning concept. This concept requires the artillery unit to prioritize its execution process, ensuring fires are delivered on the key targets identified by the maneuver commander. Once this is completed, they reverse plan from there.

- ◆ Considering ammunition constraints: The artillery staff analyzes the ammunition and tubes available to meet the maneuver commander's intent and criteria for effects to determine the CL V resupply aspects. Consideration like prepositioning, ammunition resupply vehicles, and priorities of resupply are some of the areas that need to be addressed.
- ◆ Positioning considerations: Initial and subsequent battery and TOC locations must be carefully wargamed to ensure the key targets are fired on time and firing units are not interfering with maneuver operations. To do this requires the artillery unit to think the entire battle through from LD to objective and beyond. A technique that units utilize is to convert the reverse planning process into an artillery execution matrix (to be discussed later in the article). A unit can only fire a few missions before it has to make a survivability move. Thus, the brigade FSO, working closely with the artillery S3, coordinates land based on the original order and overlay for artillery units with the brigade S3 to include convoy and MSR routes.

- ◆ Command & Control: Good communication is necessary to command and control. Proper positioning of subordinate units with communication as a major consideration cannot be over emphasized. The artillery CESO ensures communication is maintained between the batteries, artillery TOC/FDC, and FSO/FSE elements by recommending positions based on line of sight and utilization of the RETRANS vehicle.
- ◆ Fire direction considerations: The battalion FDO, along with the commander and S3, analyze the fire plan to ensure:
  - The battalion can shoot the targets.
  - Battery moves do not interfere with planned fires in support of the commander's concept.
  - The person (FSO, FO, etc.) who will trigger the mission is clearly identified to include nets and call signs.
  - The artillery S3 or FDO resolve any conflicts in the fire plan with the brigade FSO.
  - Then, the battalion FDO meets face-to-face with the battery FDOs and discusses how the fire plan will be executed. The meeting must address:
    - What targets each battery will shoot.
    - Who triggers the mission.
    - How the command and control of all fire missions will occur.
    - What are the ammunition requirements.
    - What are the maneuver and field artillery commanders' concepts for the battle.
    - Who assumes control of fires if the battalion FDC is destroyed or loses communications.

Close coordination between the battalion FDO and the brigade FSO prior to the battle results in a well executed fire plan. The NTC demonstrates that the battalion FDC and brigade FSO are the key players in the execution of fire support.

The involvement of the artillery S2 in this wargaming process is critical. The artillery S2 must coordinate with the supported unit S2s to ensure his data matches theirs. Upon receipt of the target overlay from the brigade FSO, he compares it with his template to verify all avenues of approach, TAIs, NAIs, and high value targets (HVT) are covered. The artillery S2 can also advise the S3 whether groups, series, or other fire support means are aligned correctly based on the enemy formations. This will ensure the time sequence of the fire plan corresponds to the enemy's anticipated rate of march. Often, a fire plan looks great on paper but fires are late because no consideration was given to the enemy's march rate and the required mission processing time.

The field artillery commander and S3 ensures a coordinated wargaming process to include dissemination. A technique to disseminate this information is the artillery execution matrix (See Table 1). Similar to the fire support matrix, it uses decision points to influence tactical actions or moves. Phase lines, checkpoints, groups, or series are the decision points. In the defense, enemy timelines provided by the S2 are the decision lines. These timelines depict the enemy rate of advance, modified by terrain constraints. In the offense, movement of friendly units are the decision points to influence actions or moves.

	WHEN B CO IS AT LD	WHEN LEAD ELEMENT IS AT PL CHERYL	COMPLETION OF SERIES MICHEALE	COMPLETION OF GROUP A1B
A Btry	Prep to March Order	Move to Pos. 3 AOF 1800*		Prep to March Order
B Btry			Prep to March Order	Move to Pos. 5 AOF 2400
C Btry		Prep to March Order	Move to Pos. 3 AOF 2200	
HHB	Jump TOC Prep to March Order	Jump TOC move to Pos. 15	Main TOC Prep to March Order	Main TOC move to Jump TOC Location
SVC Btry	Trains*** move to Pos. 17		Prep to March Order	
RADAR (Q-36)			Prep to March Order	Move to Pos. R1 AZ 2000**
ADA		Prep to March Order	Move to Pos. ADA-1	

\* AOF: Azimuth of fire

\*\* AZ: Azimuth

\*\*\* Considerations should be made to move the trains first.

**Table 1. Artillery Execution Matrix (offense)**

The keys to this matrix are good communications, a well-developed wargaming process, and close coordination with the brigade FSO. The brigade FSO must keep the artillery TOC informed as to when the maneuver units cross key decision points. The matrix allows anyone to continue the battle if the S3 is killed. The S3 is responsible to coordinate the battalion's survey priorities with the reconnaissance survey officer (RSO).

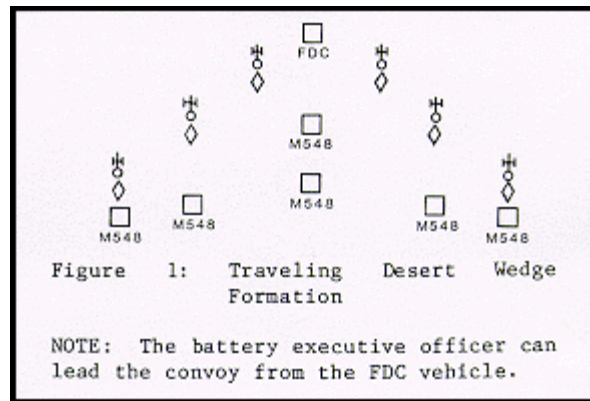
This artillery wargaming process can be conducted at any level.

## Desert Movement Techniques (FM 6-50, Chap 3)

Too often, artillery batteries fail to analyze the distance to travel, the terrain to traverse, and unit capability (training) before determining their convoy movement technique. In the desert, distances of more than 9-10 km, even on valley floors, are more quickly traveled in a column formation on a road (based on METT-T), as outlined in FM 6-50. Some disadvantages of using this formation are:

- ◆ Poor visibility because of the dust.
- ◆ Column formation dust creates a signature.
- ◆ Vulnerable to air attack.
- ◆ Control of convoy interval and speed due to length.

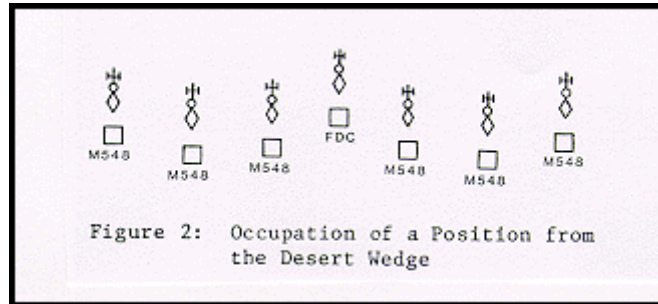
When METT-T does not allow the utilization of the column formation or the move is 3-8 km, a good technique used at the NTC is the "desert-wedge" formation (See Figure 1). The formation maximizes command and control, as well as reaction time. The "desert-wedge" places the howitzers abreast with the battery fire direction center (FDC) in the middle. The interval between the vehicles depends on METT-T. The ammunition carriers (M548) in a self-propelled unit will follow the wedge. The combat service support vehicles under the 1SG follow at a greater distance and join up later.



Advantages of the "desert-wedge" formation are:

- ◆ Improve visibility on dusty terrain.
- ◆ Reduce vulnerability to ambushes.
- ◆ Improve response times for emergency missions. (See Figure 2)
- ◆ Increased survivability due to lateral dispersion.
- ◆ Improve all around security at halts.
- ◆ Improve command and control due to decreased convoy length (day only).





A lack of radios complicates communication within the "wedge" at night. Some units have solved this problem by obtaining hand-held walkie talkies or PRC-68, small unit transceivers. Additional advantages of hand-held walkie talkies are:

- ◆ Convoy control
- ◆ Laying of the battery in hasty occupations
- ◆ Providing internal communications for battery leadership

### **Rehearsing the Fire Plan**

(FM 6-20, Chap 3 & App B; FC 6-20-20, Sec III)

The successful execution of a fire plan is directly proportional to the amount of prior planning and rehearsing. Units, as a whole, plan and coordinate fire plans well but very few units take the time to rehearse them with the maneuver plans. Rehearsing a fire plan is not different than wargaming a maneuver commander's concept of the operation. In fact, both require the same thought process and players. This thought process must ensure synchronization of fire support to enhance the maneuver commander's intent of fighting the battle. When rehearsing a fire plan, the following areas must be addressed:

- ◆ Who is responsible to initiate the mission and over what net?
- ◆ What is the redundancy in execution?
- ◆ Who clears fires?
- ◆ How is the maneuver commander made aware of the voids in fire support due to artillery units moving, mission processing times, etc?
- ◆ What are the capabilities and limitations of field artillery?
- ◆ How many missions can the artillery fire before moving?
- ◆ How many targets of opportunity can be fired without interfering with the execution of the fire plan?

Units use two techniques to rehearse a fire plan. They are the sand table and terrain sketch. Both techniques use the same thought process. The sand table technique requires more preparation time, but it gives the commanders, staff, and other elements of the combined arms team a better perspective of how the fire plan will be executed. Using this technique, the maneuver commander walks through the concept of the operation and depicts (based on the fire plan) where and when he wants fire support. As the maneuver commander identifies a target:

- ◆ The person shooting it explains where and when he executes the mission, what net and call signs he uses, and what effects he anticipates on the target.
- ◆ The alternate shooter addresses the same questions.

This rehearsal continues until the fire plan is completed. This tests whether the fire support plan supports the task force commander's scheme of maneuver. Other successful tactics, techniques, and procedures to execute fires are:

- ◆ To assign targets (high value targets, groups, series, etc.) to a commander for execution, not to the FSO. In most cases, the FSO is going to be co-located with the commander and will actually do the requesting and adjusting. The smart maneuver commander ensures his subordinates know how the fire plan is synchronized with the battle plan. A maneuver company commander, given the mission to fire group A1B at PL RED, will certainly be at the right place, at the right time, to do just that. He will also probably ensure his FSO has good communications with the FDC and the mission goes as planned.
- ◆ To control the target of opportunity missions that are fired during the battle by the maneuver commander with close coordination with the FSO.
- ◆ To rehearse the fire plan by the field artillery battalion. This plan must be from a processing time perspective to ensure sufficient time is allowed for the artillery to execute the fire. For example, the battalion fire direction officer (FDO) will process the mission from the observer and send it to the battery FDC(s) who will compute it and send it to the guns as a dry fire mission. Some fire plans cannot be shot because they do not allocate enough time to process the missions.

A well-planned, coordinated, and rehearsed fire plan produces devastating results on the battlefield.

**Utilization of the FA Battalion's Chain of Command (Cdr, XO, S3)**  
(FM 6-20-1J, Chap 3)

The direct support mission of the field artillery is the most common support relationship between the field artillery and maneuver. The most successful units totally integrate the combined arms team players. This team attitude extends not just to the task force FSO-maneuver commander relationship, but to the whole field artillery battalion command and staff structure. Several techniques utilized at the NTC to exploit the experience and expertise of artillery battalion personnel are:

- ◆ Successful artillery battalion commanders spend the majority of their time as the fire support coordinator (FSCOORD). He attends all brigade orders, participates in the maneuver wargaming process, and constantly advises his maneuver counterpart on all aspects of fire support. The artillery battalion commander has two responsibilities in combat operations: he is the artillery commander and the senior FSCOORD to the brigade. The artillery commander can be found in the brigade TOC following the flow of battle. This gives him the capability to make key decisions expeditiously and allows him to keep his TOC updated on the current situation. If the mission dictates, he can be forward with the brigade commander. He may also be found in the artillery TOC executing the fire plan and actively fighting the current battle.
- ◆ A few units successfully used the executive officer (XO) as the 2IC during the battle and positioned him in the artillery TOC. The artillery XO is a critical player in both tactical and logistical problem solving. During the preparation, planning, and consolidation phases, the XO is deeply involved in coordinating CSS. During the battle, he is following the conduct of the battle, reporting to higher headquarters, integrating CSS into the overall plan, and planning for future operations. The advantage here is that he is in a position to quickly and effectively assume command of the battalion should the artillery commander become a casualty. The XO is also in a position where he cannot only orchestrate the actions of the staff assigned to the TOC, but can also monitor CSS activities between the trains and the firing batteries.
- ◆ The artillery S3 is primarily controlling fires while maintaining a close liaison with the supported brigade. During the preparation and planning phases, the S3 makes face-to-face coordination with the brigade staff. In the execution phase, the S3 is in the artillery TOC fighting the current battle.

**Considerations and Techniques in Employing FA Delivered Scatterable Mines**  
(FM 71-3, Chap 6; TC 6-20-5, Chap 1-3, 5; FM 20-32, Chap 2; FM 5-102, Chap 5)

Field artillery delivered scatterable mines, the Area Denial Artillery Munition (ADAM), and the Remote Antiarmor Mine System (RAAMS) give maneuver commanders a flexible and effective weapon that can be used in both defensive and offensive operations. Their primary purpose is to delay, channelize, disrupt, shape, and disorganize enemy forces. The planning and coordinating of FA scatterable mines is a joint responsibility of the maneuver commander, S3, S2, the engineer officer, and the FSO. The commander and S3 plan, based on the engineer and S2 recommendations on location and timing of employment. The FSO advises on availability, technical aspects of deliver, cost of employing FA scatterable mines, and other fire support considerations. Some of the areas the FSO must address are:

- ◆ Tactical considerations:
  - Terrain: ADAM/RAAMS effectiveness is greatly reduced when employed in heavy woods, built-up areas, on steep slopes, and on hard surfaces.
  - Weather: Deep mud and snow (2-3 inches for ADAM and 6-8 inches for RAAMS) greatly reduces effectiveness.
  - Restrictions: Employment authority should consider restricting ADAM/RAAMS use in areas that would limit their abilities to execute maneuver plans.
  - Range: maximum range 17,000 meters.
- ◆ Logistics: Normally, 155 mm field artillery units carry short self-destruct (SD) ADAM/RAAMS as part of their basic load. Long SD ADAM/RAAMS are used primarily for planned minefields in support of obstacle plans. Use of long SD ADAM/RAAMS requires advance logistical coordination because it has a significant impact on the resupply of artillery ammunition. The number of projectiles required to achieve the desired area density of a 400 x 400 meter minefield are shown in Table 2.

			<b>Transportation Requirements</b>		
<b>Purpose =</b>	<b>#RAAMS per aimpoint/desired density *</b>	<b>#ADAM per aimpoint/desired density *</b>	<b>2 1/2 or</b>	<b>5T or</b>	<b>S&amp;P;</b>
Low (harassment)	24/0.001	3/0.0005	-	-	-
Medium (coverage by direct fire)	48/0.002	6/0.001	2	1	1 **
High (coverage by light direct fire)	96/0.004	12/0.002	4	2	1

\* Mines per square meter

\*\* Carrying capacity for three medium density minefields.

The above factors allow for estimation of ammunition transportation requirements for selected minefield densities.

**Table 2. Number of Projectiles and Transportation Requirements**

- ◆ Delivery times: These times can vary from situation to situation; however, the times indicated in Table 3 are for planning purposes. Times include planning, coordination, technical data computation, and firing times for a 400 x 400 minefield.

<b><u>Purpose</u></b>	<b><u>Preplanned</u></b>	<b><u>Target of Opportunity</u></b>
Low	5-7 Min	25-30 Min
Medium	7-12 Min	30-35 Min
High	12-20 Min	35-40 Min

**Table 3. Delivery Times**

A standard 400 x 400 meter minefield is fired at high angle. Low angle is used for a 200 x 200 meter minefield.

When employing ADAM/RAAMS, the maneuver commander must consider that:

- ◆ The limited number of tubes requires the supported maneuver commander to establish relative priorities among ADAM/RAAMS, DPICM, ILLUM, etc.
- ◆ Logistical requirements increase for field artillery units when firing ADAM/RAAMS. Maneuver commanders may need to request additional vehicles to support the delivery of ADAM/RAAMS. If vehicles are not available, an alternate solution is to establish the ammunition transfer point (ATP) as far forward as possible. This would reduce the turnaround times of resupply vehicles. Another technique is to prestock ammunition when targets are preplanned.
- ◆ Due to the volume of fire necessary to emplace a minefield, a survivability move for the firing unit is essential. The requirement of continuous fire must be considered when timing moves.
- ◆ Delivery error and safety may limit its use. The nearest aimpoint should be no closer to friendly troops than 425 meters (if adjusted) and 700 meters (if non-adjusted).

The following are some successful tactics, techniques, and procedures in employing FA delivered scatterable mines:

- ◆ Ground maneuver units must observe and cover the minefield with direct and/or indirect fires (it's not a killer by itself).
- ◆ The minefield must be tied in with other engineer obstacles and terrain.
- ◆ In the offense, the ADAM/RAAMS must not interfere with the friendly scheme of maneuver. Two techniques successfully used at the NTC are:
  - 1) To isolate the objective by hindering the withdrawal of enemy forces or the enemy's ability to reinforce the objective area.
  - 2) To supplement flank security forces in protecting flanks along avenues of approach into friendly areas.
- ◆ In the defense, ADAM/RAAMS is used to reseed breached minefields, reinforce existing obstacles or terrain, and slow down the second echelon.

# **SECTION VI**

## **MOBILITY/COUNTERMOBILITY/SURVIVABILITY**

### **Covering Fire and the Siting of Obstacles**

(FM 5-102, Chap 3)

Fire dictates obstacle siting. Covering fire, particularly direct fire, makes obstacles effective. To maximize synchronization of obstacles and fires:

- ◆ Identify engagement areas where direct fire is most effective and then,
- ◆ Site obstacles to support the fires.

Maneuver company responsibilities for obstacles are:

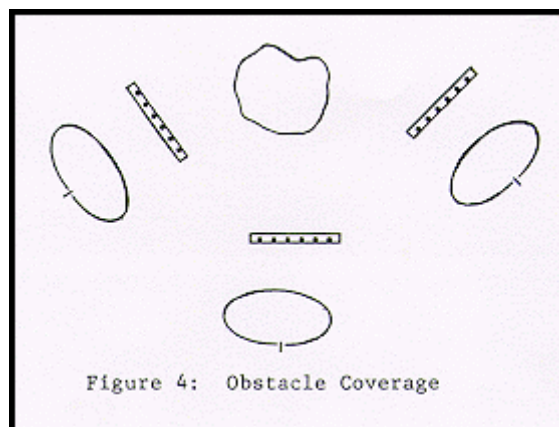
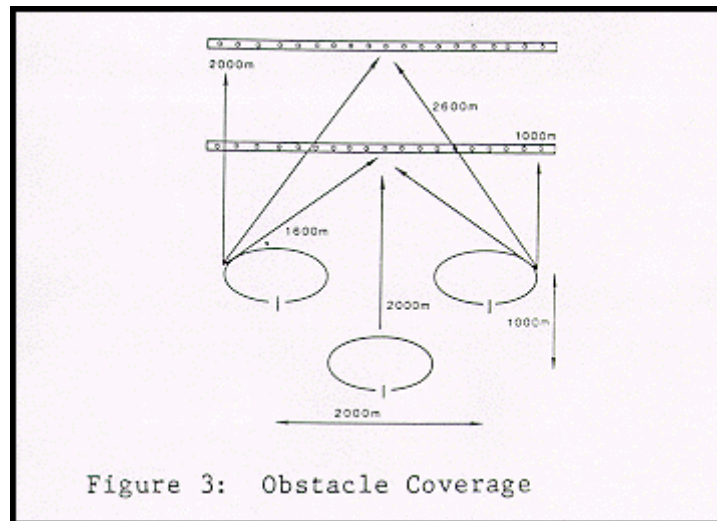
- ◆ Siting
- ◆ Coverage by fire
- ◆ Obstacle security

Engineers coordinate the exact obstacle site on the ground with the maneuver company and its FSO.

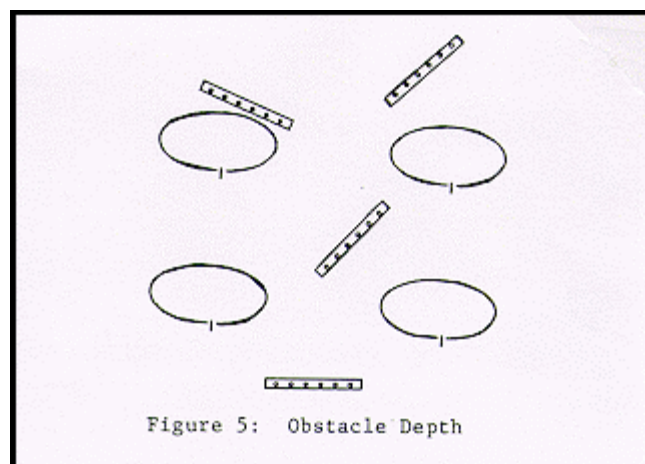
Obstacles do not, as commonly perceived, cause deployment; direct fire causes Soviet deployment. Attackers in column move faster, retain maximum control, and are in the best formation to pass through a breach. The line provides the least control and must be reformed into column to negotiate a breach. Obstacles providing delay in a kill zone are, therefore, most effective when defensive firepower forces the enemy to deploy.

Flank engagements are more effective than frontal fires. Obstacles placed to the front of weapons positions at maximum effective range are not as effective as closer in obstacles. All weapons cannot be brought to bear and the more vulnerable flanks and rears of enemy combat vehicles are not exposed (compare Figures 3 and 4). The nearer the obstacle:

- ◆ The more weapons which can effectively cover the obstacle
- ◆ The easier the obstacle is to secure
- ◆ The more difficult for the enemy to obscure, because fires are coming from multiple directions



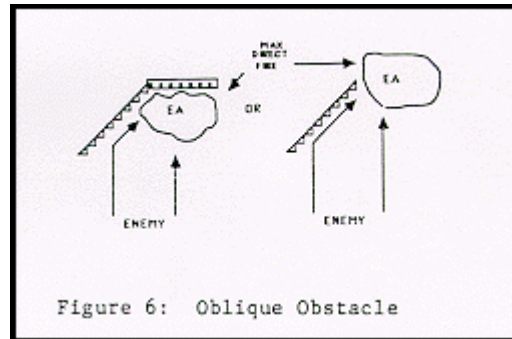
Depth (see Figure 5) can be achieved with obstacles in front of, within, and behind the battle position. Do not sacrifice quality of obstacles for quantity to achieve depth.



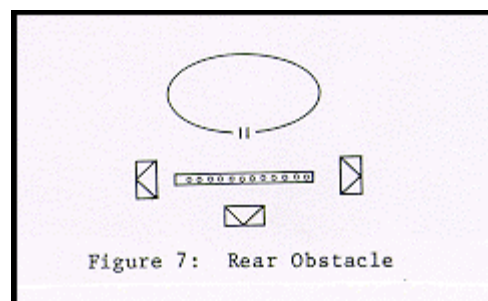


Fire reinforces surprise at obstacles by distracting the attacker's attention from the obstacles. Identification of obstacles, particularly ones concealed by reverse slopes or camouflaged by vegetation, becomes difficult for the attacker receiving fire. Crews blunder into minefields and can be knocked unconscious by hitting tank ditches at high speed.

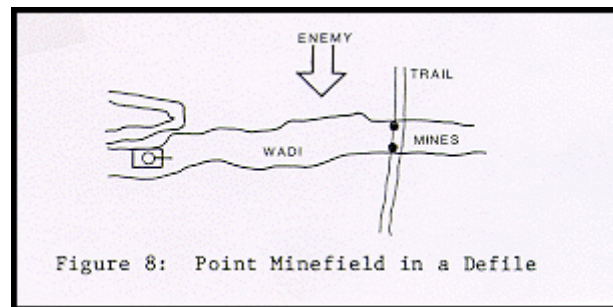
This phenomenon makes the oblique obstacle, rear obstacle, and point minefield effective. The momentum of a deployed attack hitting the oblique obstacle (see Figure 6) generally forces the armored formation into the kill zone. Without fire causing deployment, the attacker may breach the obstacle. Any breach renders the oblique obstacle less effective because vehicles generally enter the first breach they encounter.



The rear obstacle is effective because defensive fires generally have disrupted the attacker's command and control. The rear obstacle delays a disorganized mass of vehicles. TOWs have been extremely effective covering rear obstacles. Companies can also displace to supplementary firing positions to engage the enemy to the rear (see Figure 7).



The point minefield in a defile depends on surprise. The enemy can traverse the defile (see Figure 8) either by cross-country means or more rapidly utilizing existing trails. These smaller trails are less likely to have been reconnoitered. A few vehicles will control the kill zone. Cross-country or on a trail, the attacker is slowed and engaged by flank fires in the kill zone.



Fire creates security, forces the enemy to deploy, and increases the surprise at an obstacle. To maximize synchronization of obstacles and fire, place obstacles where fire is already effective.

## **SECTION VII: AIR DEFENSE**

### **Stinger Team Survivability**

(FM 44-1, Chap 4)

The lethality of weapons on today's battlefield makes it imperative that the Army take measures to increase the survivability of Stinger teams. The task force can accomplish this by either placing them in a dedicated carrier under armor protection or by digging the team in with the required 18-36 inches of overhead cover.

The preferred method of Stinger employment in offensive operations is placing teams in dedicated carriers, such as the M113. The M113 provides:

- ◆ Increased survivability
- ◆ Increased command and control
- ◆ Mobility commensurate with maneuver force
- ◆ Increased ammunition carrying capability if modified with a missile ready-rack

Utilizing an M113 as a dedicated carrier also has its shortcomings. The availability of M113s is the biggest problem when discussing their utilization as a dedicated carrier. To resolve the problem of M113 availability, a unit transferred vehicles from its Chaparral platoons to the Stinger sections of the Vulcan batteries. Future TOE requirements mandate that Chaparrals will become a Corps asset. Transferring Chaparral M113s for use by Stinger teams has merit only if divisional ADA units have retained their Chaparral assets.

Another means of increasing the survivability of a Stinger team is to dig them in with adequate overhead cover during defensive operations. It is the responsibility of the SHORAD platoon leader to ensure that his Stinger assets are dug in.

The SHORAD leader must be proficient at analyzing terrain quickly and accurately. It is imperative that the SHORAD leader consider both mission accomplishment and survivability when deploying ADA assets on the battlefield.

### **Air Defense Innovation**

(FM 44-1, Chap 4)

In an attempt to maximize the missile hauling capabilities of the M113, a unit developed a missile ready-rack inside the M113. The missile ready-rack is capable of storing nine Stinger missiles which increases the availability of ready-to-fire Stinger rounds for immediate use by the Stinger gunner. The utilization of a modified M113 is only an interim solution until the Army gets a more survivable vehicle for Stinger employment.

Additional information concerning the missile ready-rack can be obtained by contacting the USAADASCH, ATTN: ATSA-EVD, Ft Bliss, TX 79916-7040 or by calling AV 978-3895/4007.

## **SECTION VIII: COMBAT SERVICE SUPPORT**

### **Good PMCS Equals Combat Readiness**

(FM 71-2J, Chap 8)

Intense, continuous combat over extended distances characterizes the AirLand Battlefield. Therefore, unit personnel must ensure that their on-hand equipment is maintained in a high state of combat readiness. The cutting edge of this maintenance effort lies with the operators and crews. They are tasked with the responsibility of performing preventive maintenance checks and services (PMCS), which include inspecting, lubricating, cleaning, preserving, tightening, spot painting, and making minor adjustments. Consequently, they keep on-hand equipment working, identify failures, take corrective action within their capability and report failures beyond their repair capability to unit mechanics.

The -10 operator's manual, commander's guidance, and the factors of METT-T will ultimately determine priorities for this effort. Successful units stress the following preventive maintenance checks and services:

- ◆ Check tightness of bolts more often because rough terrain loosens everything. Check the wear of track vehicle drive sprockets and the tightness of roadwheel mounting bolts before, during, and after operations. Sand, rocks and gravel tend to break or damage lube fittings and relief valves. Rough terrain causes hardware to work loose if it's not properly torqued.
- ◆ Check wheeled vehicle tires frequently for cuts and wear. Abrasive rocks and sand increase tire wear.
- ◆ Leave plenty of space around radio cooling fan intake and exhaust vents. Taping slabs of styrofoam to the top of the radio will insulate it against direct sun rays. To prevent heat build-up, insure heat exchanges (vents) are kept clean, IAW paragraph 5-5, chap 5, TM 11-582-401-12.
- ◆ Equipment stored or parked for extended periods should have all fire control equipment covered because the optical elements of periscopes, telescopes, sights, etc. are subject to sun discoloration.
- ◆ Sand and grit will stick to all lubricants on small arms and can cause stoppages. Daily cleaning, as a minimum, is required. Cover all openings on weapons to aid in reducing sand and grit maintenance problems, as long as it doesn't affect the functioning of the weapon.

Leaders should routinely spot check unit tracked vehicles for:

- ◆ Proper track tension.
- ◆ Cleanliness of air filters.
- ◆ Boresight of main guns.
- ◆ Check weapon sights for mildew, condensation, foreign matter, etc.

M109 Recommended Leader Checks:

- ◆ Battery water level.
- ◆ Proper fluid levels.
- ◆ Roadwheels for proper oil level in the sight gage, leaks, and rubber missing.
- ◆ Hydraulic system for leaks in the lines and hoses.
- ◆ Elevating mechanism for leaks.
- ◆ Variable recoil cylinder for proper gage pressure during firing and leaks.
- ◆ Operational firing mechanism and breechblock.
- ◆ Fire control equipment is firmly secured, sight reticles are aligned, counters and knobs do not bind.

M113/M548/M577 Recommended Leader Checks:

- ◆ Battery water level.
- ◆ Engine oil leaks.
- ◆ Proper fluid levels.
- ◆ Exhaust leaks (particularly M113, M577).
- ◆ Fuel leaks.
- ◆ Operational ramp (M113, M577).

### **Ammunition Transfer Point (ATP)** (FM 63-20, Chap 5; FM 71-2J, Chap 8)

The Class V ATP section is part of the supply company of the forward support battalion (FSB). For safety, the ATP should be separated from other resupply activities by at least 500 meters. (This dispersion is only a guide and is not listed in current doctrinal manuals. Base defense planners must weigh dispersion against the need for mutual support.)

Because the ATP is a high payoff target to the enemy and vulnerable to the effects of indirect and direct fires, the FSB commander must evaluate the threat to determine the location that best supports the force. This is normally close to the main supply route and survivable. The FSB commander must standardize ATP operations to insure:

- ◆ Its location is camouflaged and protected from enemy fires.
- ◆ It is only moved based on METT-T
- ◆ It is manned for continuous operations.
- ◆ Its layout facilitates the sorting and picking up of ammunition; e.g., a yellow chemical light means HE and a red one for WP ammunition.

The ATP is vitally important to sustaining the force. It could be a high value target to the enemy because of its criticality to the sustainment effort. Proper security and smooth operation of the ATP should be emphasized in training.

## **Fire Support Needs for Rear Operations**

(FM 63-20, Chap 3; FM 90-14, Chap 5)

Few units develop adequate fire support plans for rear operations. Some common violations are a failure to fix responsibility, to request fires, to coordinate, and to train CSS personnel on fire support tasks.

Current doctrine, FM 90-14, states that "rear battle in the brigade is the responsibility of the brigade commander" and that the "brigade fire support element (FSE) is responsible for preparing and executing all fires in the brigade rear area." There is no one in the field artillery battalion designated to perform fire support planning for the FSB commander. The brigade rear command post is not in the brigade fire support net. The brigade FSE's responsibility for the fire support of the entire brigade area makes it difficult to execute and clear fires in the rear. This fact has lead to poor execution of fire support for rear operations.

Demand for artillery fires will exceed supply. In battle, this problem will be even more crucial. CSS units are critical to overall task force success and should request and receive fire support.

Coordination of fire support, as well as direct fires, could prove difficult given the heavy concentration of CSS units in the rear area. The FSB commander must carefully weigh the advantages and disadvantages of dispersion versus concentration. Once the FSB commander evaluates the threat, he allocates terrain to subordinates. The brigade FSE, in conjunction with the FSB S3, needs to coordinate a fire plan for the BSA based on CSS unit locations, major supply routes, and integration of the FSB's overall base cluster defense.

Few CSS units have the opportunity to practice fire planning during training. CSS personnel rarely practice calls for fire. Maneuver units do not require a rear operation fire plan; thus, one is not prepared. Practice in rear operations fire planning is needed now to avoid self-inflicted casualties or damages.

Fire support for rear operations is equally as important as fire support for the close and deep operations. Specific recommendations include:

- ◆ Develop the fire support plan based on IPB.
- ◆ Develop a fire support plan which is coordinated by the FSB S3 and brigade FSO.
- ◆ Establish procedures to clear fires in the rear.
- ◆ Train CSS personnel on adjustment of fires and preparation of a fire plan. (Training Set, Fire Observation [TSFO] is a good training aid for this class).

The CG, Logistics Center, has sent a message to all DISCOMs requesting input on CSS unit responsibilities in rear operations. This topic will be discussed at the DISCOM Commander's Conference in October 1986.